

**INTERFACE BETWEEN A PIECE OF BAGGAGE AND A PRECONCENTRATOR  
COLLECTOR**

**Cross-Reference to Related Applications**

This is ~~related to~~ a continuation of Application No. 10/224,719 filed August 21, 2003, which is related to Application No. 10/224,688, entitled "Method of Analyzing the Constituents of Air Extracted from the Interior of a Piece of Baggage" also filed contemporaneously herewith August 21, 2002.

**Technical Field**

This invention relates to the field of testing for explosives and more particularly, using a testing unit capable of detecting trace amounts of explosives such as an ion trap mobility spectrometer to analyze the constituents of air extracted from the interior of a piece of baggage to determine whether the baggage contains explosives.

**Background**

Aircraft and particularly, those operated by passenger airlines, are considered terrorist targets. Thus, aviation security is essential to the safety of airline passengers. One attempt to minimize the possibility of a terrorist attack includes screening all baggage (i.e., luggage) that enters the aircraft. Specifically, both carry-on and checked baggage are screened for bombs and/or explosives.

Some of the current methods used to screen carry-on and checked baggage include manual inspection, X-ray, and trace detection. Manual inspection is invasive and often time consuming. Utilizing X-ray equipment is a non-invasive procedure. However, that method requires the operator of the X-

Fig. 4 illustrates one embodiment of step 302 – the step of inserting a baggage-preconcentrator interface 400 into a piece of baggage 404. Specifically, Fig. 4 illustrates an individual inserting a baggage-preconcentrator interface 400 into the zipper 402 of a piece of baggage 404. Figs. 5A and 5B are enlarged views of the baggage-preconcentrator interface 400 inserted within the zipper 402 of the baggage 404. Those figures illustrate that the zipper 402 includes two rows of teeth 502 and a two sliders 504, which further include pull tabs 506. And when the baggage-preconcentrator interface 400 is inserted into the zipper 402, the baggage-preconcentrator interface 400 grips at least a portion of each row of teeth 502.

Once the baggage-preconcentrator interface 400 is gripping the zipper's teeth 502, it may be preferable to close the zipper 402. Closing the zipper may include the step of sliding one or both of the sliders 504, via the pull tabs 506, toward the baggage-preconcentrator interface 400 until the slider(s) 504 is adjacent and/or abuts the baggage-preconcentrator interface 400. Some sliders 504 may include locking rings 508, which allow the sliders 504 to be locked together, thereby preventing someone from opening the zipper 402 without first removing a lock. As will be discussed below, it may be preferable for the baggage-preconcentrator interface 400 to include corresponding (i.e., complementary) locking rings 624. If the baggage-preconcentrator interface 400 includes locking rings 624, it may be desirable to slide the slider(s) 504 toward the baggage-preconcentrator interface 400 until the openings within the locking rings [[504]] 508, 624 align with one another. Once the locking rings [[504]] 508, 624 are aligned, it would be possible to secure the baggage-preconcentrator interface 400 to the sliders 504 by passing a lock or other type of fastening means through the holes within the locking rings [[504]] 508, 624.